

## **CLAIMS**

We claim:

1. A method for treating a surface of a layered polymeric structure comprising:
  - providing a first sheet of material;
  - providing a second sheet of material;
  - positioning the first sheet or the second sheet to overlap at least a portion of the other sheet to define an interference zone;
  - directing a first polymeric material into the interference zone to adhere the first sheet to the second sheet to form the layered structure; and
  - texturing a surface of the first sheet or the second sheet to form a pattern on the surface.
2. The method of claim 1 wherein the first sheet is a second polymeric material.
3. The method of claim 2 wherein the second polymeric material is a monolayer structure.
4. The method of claim 3 wherein the second polymeric material is a multiple layer structure.
5. The method of claim 2 wherein the second polymeric material is selected from the group consisting of polyolefins, ethylene and vinyl acetate copolymers, ethylene copolymerized with carboxylic acids having from 3 to 20 carbons and ester and anhydride derivatives thereof, ethylene and vinyl alcohol copolymers, polyamides, polyesters, polyvinyl chloride, PVDC and elastomers.
6. The method of claim 5 wherein the polyolefins are selected from homopolymers and copolymers.
7. The method of claim 6 wherein the copolymers are selected from copolymers of ethylene and  $\alpha$ -olefins having from 3 to 20 carbons.

8. The method of claim 4 wherein the multiple layered structure comprises a first layer of an ethylene and  $\alpha$ -olefin copolymer and a second layer of an ethylene and vinyl alcohol copolymer.

9. The method of claim 2 wherein the second sheet is selected from the group consisting of a third polymeric material, paper, and metal.

10. The method of claim 9 wherein the third polymeric material is selected from the group consisting of polyolefins, ethylene and vinyl acetate copolymers, ethylene copolymerized with carboxylic acids having from 3 to 20 carbons and ester and anhydride derivatives thereof, ethylene and vinyl alcohol copolymers, polyamides, polyesters, polyvinyl vinyl chloride and elastomers.

11. The method of claim 10 wherein the third polymeric material is a polyamide.

12. The method of claim 11 wherein the polyamide is selected from nylon 6,6, nylon 6, and nylon 6,12.

13. The method of claim 1 wherein the step of directing a first polymeric material comprises the step of extruding a molten polymeric material.

14. The method of claim 13 wherein the molten polymeric material is a second polyolefin.

15. The method of claim 14 wherein the second polyolefin is a homopolymer of ethylene.

16. The method of claim 1 wherein the step of texturing is carried out prior to the step of adhering the first sheet to the second sheet, substantially simultaneously with the step of joining the first sheet to the second sheet or essentially immediately after the step of adhering the first sheet to the second sheet.

17. The method of claim 16 wherein the step of texturing comprises the step of contacting the first sheet or the second sheet with a surface having a pattern.

18. The method of claim 17 wherein the surface is provided on a roll.

19. The method of claim 18 wherein the roll is a chill roll.
20. The method of claim 18 wherein the roll is a backup roll.
21. The method of claim 17 wherein the pattern is carried on two rolls.
22. The method of claim 18 wherein the pattern extends outward from the surface of the roll.
23. The method of claim 18 wherein the pattern extends inward from the surface of the roll.
24. The method of claim 18 wherein the roll is metal.
25. The method of claim 18 wherein the roll is rubber, cork, or plastic.
26. The method of claim 17 wherein the pattern comprises a plurality of spaced objects.
27. A method for treating a surface of a layered polymeric structure comprising:
  - providing a first sheet of a first polymeric material selected from the group consisting of polyolefins, ethylene and vinyl acetate copolymers, ethylene copolymerized with carboxylic acids having from 3 to 20 carbons and ester and anhydride derivatives thereof, ethylene and vinyl alcohol copolymers, polyamides, polyesters, polyvinyl vinyl chloride and elastomers;
  - providing a second sheet;
  - positioning the first sheet or the second sheet to overlap at least a portion of the other sheet to define an interference zone;
  - directing a second polymeric material into the interference zone to adhere the first sheet to the second sheet to form the layered structure; and
  - texturing the first sheet to form a pattern on a surface of the first sheet.
28. The method of claim 27 wherein the second sheet is selected from the group consisting of a third polymeric material, paper, and metal.

29. The method of claim 28 wherein the second sheet is a third polymeric material selected from the group consisting of polyolefins, ethylene and vinyl acetate copolymers, ethylene copolymerized with carboxylic acids having from 3 to 20 carbons and ester and anhydride derivatives thereof, ethylene and vinyl alcohol copolymers, polyamides, polyesters, polyvinyl vinyl chloride, PVDC and elastomers.

30. The method of claim 29 wherein the step of texturing is carried out essentially simultaneously with the step of adhering the first sheet to the second sheet.

31. The method of claim 30 wherein the step of directing a second polymeric material into the interference zone comprises the step of flowing the second polymeric material in a substantially molten state.

32. The method of claim 31 wherein the step of directing a second polymeric material into the interference zone comprises the step of applying an adhesive material.

33. The method of claim 30 wherein the step of texturing comprises the step of contacting the first sheet with a surface having a pattern.

34. The method of claim 33 wherein the surface is provided on a roll.

35. The method of claim 34 wherein the roll is a chill roll.

36. The method of claim 34 wherein the roll is a back-up roll.

37. The method of claim 33 wherein the surface is carried on two rolls.

38. The method of claim 34 wherein the pattern extends outward from the surface of the roll.

39. The method of claim 34 wherein the pattern extends inward from the surface of the roll.

40. The method of claim 33 wherein the pattern is generally a checkerboard pattern.

41. The method of claim 33 wherein the pattern is defined by a series of spaced protuberances.

42. The method of claim 41 wherein the protuberances have a generally circular shape.

43. The method of claim 41 wherein the protuberances have a polygonal shape.

44. The method of claim 41 wherein the protuberances have an irregular shape.

45. The method of claim 41 wherein the protuberances have a generally teardrop shape.

46. The method of claim 41 wherein the protuberances have a first set of protuberances with a first shape and a second set of protuberances with a second shape different from the first shape.

47. The method of claim 41 wherein the protuberances are generally S-shaped.

48. The method of claim 30 wherein the first sheet is a monolayer structure or a multiple layered structure.

49. The method of claim 30 wherein the first sheet is a monolayer structure.

50. The method of claim 30 wherein the first sheet is a multiple layered structure.

51. The method of claim 50 wherein the multiple layered structure has a first layer and a second layer.

52. The method of claim 51 wherein the first layer is a polyolefin.

53. The method of claim 52 wherein the second layer is a barrier material.

54. The method of claim 53 wherein the barrier material comprises ethylene vinyl alcohol copolymer or PVDC.

55. The method of claim 51 wherein the first layer is an ethylene and  $\alpha$ -olefin copolymer and the second layer is ethylene and vinyl alcohol copolymer.

56. The method of claim 48 wherein the second sheet is a monolayer structure or a multiple layered structure.

57. The method of claim 56 wherein the second sheet contains a layer of a polyamide or a layer of a polyester.

58. The method of claim 57 wherein the second polymeric material is a polyolefin.

59. The method of claim 58 wherein the second polymeric material is a homopolymer of ethylene or a copolymer of ethylene and  $\alpha$ -olefin having from 3 to 20 carbons.

60. The method of claim 59 wherein the second polymeric material is a homopolymer of polyethylene.